

MATI750: The Cow Problem

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Here is the solution to the cow problem using the built-in Mathematica function `Solve`.

```
Rest[Sort[DeleteDuplicates[
  (Solve[{ $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} + \frac{1}{n} = 1$  &&  $0 \leq x \leq y \leq z \leq n$ }, {n, x, y, z}, Integers] /. (_ -> a_) :->
    a) /. {n_, x_, y_, z_} :-> If[x | n && y | n && z | n, {n - 1, x, y, z}]]] // Column
{3, 4, 4, 4}
{5, 2, 6, 6}
{5, 3, 3, 6}
{7, 2, 4, 8}
{9, 2, 5, 5}
{11, 2, 3, 12}
{11, 2, 4, 6}
{11, 3, 3, 4}
{17, 2, 3, 9}
{19, 2, 4, 5}
{23, 2, 3, 8}
{41, 2, 3, 7}
```